

I claim:

- ✓ 1. A communication system that enables remote land line station devices to make and receive calls over a wireless network using a wireless phone, such as a cell phone, in series between said wireless network and said remote land line station devices, said system comprising:
  - a plurality of wireless interfaces;
  - a cell phone base unit coupled to a first one of said wireless interfaces;
  - said cell phone base unit is adapted to be coupled signal-wise to a cell phone;
  - at least one remote land line station device coupled to another one of said wireless interfaces; and
  - apparatus including said wireless interfaces responsive to the receipt of an incoming call from said wireless network for extending said incoming call via said cell phone to said at least one remote land line station device.
- 15 2. The system of claim 1 characterized in that said apparatus for extending further comprises:
  - apparatus that monitors said incoming call; and
  - apparatus that detects an on-hook signal at said at least one remote land line station device for terminating said call between said remote land line station device and said wireless network via said cell phone and said wireless interfaces.
- 20 3. The system of claim 2 characterized in that said apparatus for extending further comprises:

apparatus responsive to the initiation of an outgoing call by said at least one remote land line station device for extending said outgoing call via said wireless interfaces and said cell phone and said wireless network to a called station.

5    4.         The system of said claims 1 characterized in that said at least one remote land line station device comprises any one of or any combination of:

land line phones;

cell phones;

wireless phones;

10      cordless phones;

computers;

PDAs;

communication paths extending to other networks and/or network appliances;

fax machines;

15      fire, security and alarm detection devices;

printers; and

household appliances.

5.         The system of claim 4 further comprising:

20      apparatus that detects an off-hook state of a calling one of said remote land line station devices;

apparatus including said wireless interfaces that transmits said off-hook signal from said calling remote land line station device to said cell phone;

25      apparatus that activates said cell phone in response to the receipt of said on-hook signal;

apparatus including said wireless interface associated with said calling remote land line station device for receiving a called station number from said calling remote land line station device;

apparatus including said wireless interface associated with said calling remote

5 land line station device for transmitting said called station number to said cell phone;

      said cell phone being responsive to the receipt of said called station number for initiating the establishment of a call via said wireless network to said called station;

apparatus for detecting an on-hook state of said called station or of said  
10 calling remote land line station remote land line station device for transmitting a call end signal to said cell phone; and

      said cell phone being responsive to said receipt of said call end signal for ending said call to said called station.

15 6. The system of claim 4 further comprising:

      apparatus including said cell phone for detecting the receipt of an incoming call from said wireless network;

      apparatus including said cell phone responsive to said detecting for applying a ringing control signal to the wireless interface associated with said cell phone;

20           apparatus for transmitting said ringing control signal to the wireless interfaces associated with said remote land line station devices;

      apparatus responsive to the receipt of said ringing control signal for applying ringing current to said remote land line station devices;

      apparatus for generating an off-hook signal at a responsive one of remote

25 land line station devices;

said off-hook signal is transmitted to said cell phone via said wireless interfaces;

    said cell phone being responsive to the receipt of said off-hook signal for terminating the generation of said ring control signal;

5       said wireless interfaces being responsive to the termination of said ringing control signal for termination ringing at said remote land line station devices;

    said cell phone being effective to monitor said incoming call;

    apparatus for detecting an on-hook state of said called station or of said responsive remote land line station device for transmitting a call end signal to said  
10      cell phone; and

    said cell phone being responsive to said receipt of said call end signal for ending said incoming call.

7.       The system of claim 1 characterized in that said cell phone is adapted to  
15      serve calls between said wireless network and said remote land line devices only when said cell phone is connected signal-wise to said base unit to connect said cell phone with said first wireless interface via said base unit.

✓ 8.       In a system having a first wireless interface adapted to be coupled to a cell  
20      phone, said system further having a second wireless interface adapted to be coupled to a remote land line station device;

    said system further comprising:

    apparatus for receiving indicia of a call request in either said first or said second wireless interfaces; and

apparatus extending said call request to the other of said first or second wireless interfaces to extend a call between said cell-phone and said remote land line device via said first and second wireless interfaces.

- 5    9.    The system of claim 8 characterized in that:
- said apparatus for receiving is operable to receive said indicia within said first wireless interface from said cell phone and to extend said call via said second wireless interface to said remote land line station device; and
- said apparatus for receiving is also operable to receive said indicia within said second wireless interface from said remote land line station device and to extend said call via said first wireless interface to said cell phone.
- 10    10.   A method of operating the system of claim 8 comprising the steps of:
- receiving indicia of a call request in either said first or said second wireless interfaces; and
- extending said call request to the other of said first or second wireless interfaces to extend a call between said cell phone and said remote land line station device via said first and second wireless interfaces.
- 20    11.   The method of claim 10 wherein :
- said step of receiving receives said indicia within said first wireless interface from said cell phone and extends said call via said second wireless interface to said remote land line station device; and

said step of extending receives said indicia within said second wireless interface from said land line station device and extends said call via said first wireless interface to said cell phone.

5       12. A method of operating a communication system adapted to enable remote land line station devices to make and receive calls over a wireless network using a wireless phone, such as a cell phone, in series between said wireless network and said remote land line station devices, said system comprising:

10           a plurality of wireless interfaces; .  
          a cell phone base unit coupled to a first one of said wireless interfaces;  
          said cell phone base unit is adapted to be coupled signal-wise to a cell phone;  
          at least one remote land line station device coupled to another one of said wireless interfaces; said method comprising the step of:  
          operating apparatus within said wireless interfaces responsive to the receipt  
15          of an incoming call from said wireless network for extending said incoming call via  
          said cell phone and said wireless interfaces to said at least one remote land line  
          station device.

13. The method of claim 12 further comprising the steps of:

20           monitoring said incoming call; and  
          operating said cell phone for detecting an on-hook signal generated by said at  
          least one remote land line station device for terminating said call between said  
          remote land line station device and via said wireless network via said cell phone.

14. The method of claim 13 further comprising the step of:  
detecting the initiation of an outgoing call by said at least one remote land line  
station device for extending said outgoing call via said wireless interfaces and said  
cell phone and via said wireless network to a called station.

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15. The method of said claim 12 characterized in that said at least one remote  
land line station device comprises any one of or any combination of:

- land line phones;
- cell phones;
- 10 wireless phones;
- cordless phones;
- computers;
- printers;
- PDAs;
- 15 communication paths extending to other networks and/or network appliances;
- fax machines;
- fire, security and alarm detection devices; and
- household appliances.

20 16. The method of claim 15 further comprising the steps of:

detecting an off-hook state of a calling one of said remote land line station  
devices;  
transmitting said off-hook signal from said calling remote land line station  
device to said cell phone;  
25 activating said cell phone in response to the receipt of said off-hook signal;

transmitting a called station number from said calling remote land line station device to said wireless interface associated with said calling remote land line station device;

transmitting said called station number from said wireless interface associated

5 with said calling remote land line station device to said cell phone; and

operating said cell phone responsive to the receipt of said called station number for initiation the establishment of a call via said wireless network to said called station.

10 17. The method of claim 16 further including the steps of:

detecting an on-hook state of said called station or said calling remote land line station device and transmitting a call end signal to said cell phone;  
said cell phone being responsive to said receipt of said call end signal for ending said call to said called station.

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18. The method of claim 17 characterized in that said system exchanges the following signals between said calling remote land line station device and said cell phone during the serving of a call initiated by said calling remote land line station device:

20 an off-hook signal generated by said calling remote land line station device is transmitted via said wireless interfaces to said cell phone;

said calling remote land line station device dials the number of the called station to which said call is to be extended;

said dialed number is transmitted to said cell phone which transmits said dialed number to said wireless network for the establishment of a connection to said called station;

- said cell phone monitors said call until an on-hook signal is detected at said
- 5 calling remote land line station device and/or at said called station;

said cell phone is responsive to the detection of said off-hook signal to terminate the call between said calling remote land line station device and said called station.

- 10 19. The method of claim 17 characterized in that said system exchanges the following signals between said cell phone and said calling remote land line station devices during the serving of a call received by said cell phone from said wireless network

- in response to receipt of a call from said wireless network said cell phone
- 15 transmits a ringing control signal via said wireless interfaces of said remote land line station devices;

said ringing control signal activates a ring generator in the wireless interface associated with each of said remote land line station devices to apply ringing current to of said remote land line station devices;

- 20 the generation of an off-hook signal at a responding one of said remote land line station devices transmits a signal to the wireless interface associated with said cell phone to terminate the generation of said ringing control signal by said cell phone;

- said cell phone terminates the generation of said ringing control signal to
- 25 terminate ringing at said remote land line station devices;

said cell phone establishes a voice path between said cell phone and said responding one of said remote land line station devices.

    said cell phone monitors said call and terminates said call upon the generation of an on-hook signal by said responding one of said remote land line  
5     station devices.

20.   The method of claim 15 characterized in that step of operating said cell phone is effective to serve calls between said wireless network and said remote land line station devices only when said cell phone is connected signal-wise to said base unit  
10   to connect said cell phone with said first wireless interface via said base unit.